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CORR Insights

CORR Insights®: Bilateral Pars Defects at the L4 Vertebra Result in Increased Degeneration When Compared With Those at L5: An Anatomic Study

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Where Are We Now?

It is well known that patients with bilateral pars defects have a greater degree of disc degeneration and risk the development of spondylolysis. We also know that there is a relationship between pelvic incidence, sacral slope, and pelvic tilt with spondylolysis. In terms of instability with or without spondylolysis, it is thought that L4–L5 is inherently more mobile than L5-S1 due to the ligamentous attachments to L5 (iliolumbar) and the fact that L4–L5 often sits above the intercrestal line. Generally, spondylolysis makes a motion segment more unstable. Finally, it is generally agreed upon that increased instability begets increased disc degeneration.

Where Do We Need To Go?

We need to better understand the causes and contributors to spondylolysis and spondylolisthesis at any level of the spine. The factors that should be explored include pelvic and lumbar sagittal and morphometric parameters, genetic predisposition of patients, patient risk factors, and level of disease (as was done in the present study). It would be wonderful to have the ability to council families at risk regarding activity avoidance or modification. Equally important would be to have an effective (and cost-effective) early-warning system that would detect those at risk with high sensitivity and specificity, which might allow us to consider interventions that could avert more serious symptoms (and larger surgical procedures) later.

How Do We Get There?

Large prospective population studies are required in order to better understand the causes and contributors to spondylolysis and spondylolisthesis. Only large prospective population studies can get us: (1) Risk factor analysis, (2) genetic analysis (this would require a cohort or family

This CORR Insights® *is a commentary on the article* "Bilateral Pars Defects at the L4 Vertebra Result in Increased Degeneration When Compared With Those at L5: An Anatomic Study" *by McCunniff and colleagues available at:* DOI: 10.1007/s11999-015-4563-8.

The author certifies that he, or a member of his immediate family, has or may receive payments or benefits, during the study period, an amount of more than USD 1,000,001 from Depuy-Synthes, (Warsaw, IN, USA); and an amount of USD 100,001–USD 1,000,000 from Biomet Inc, (Warsaw, IN, USA).

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with spondylolysis), (3) activity and risk profiles, and (4) detailed assessment of the pelvic and lumbar parameters that are associated with spondylolysis and spondylolisthesis at L4 and L5.

When I say "population studies," it is generally accepted that we could only gain a captured population to study, as is the goal of our registry housed at the Hospital for Special Surgery. We would have to follow many asymptomatic people to capture and cloister the up to 7% who will ultimately have a spondylolysis.

Congratulations to the authors for studying this cloistered group of patients and gleaning the information they did.